



Magnificent Ramshorn Snail

Conservation Candidate

2019



Description

The magnificent ramshorn is an aquatic pulmonate gastropod mollusks. It has a coiled shell in the shape of a ram's horn, often reaching the size and weight of a dollar coin. The shell is brown colored, often with leopard-like spots.

Photo Credit: A. Wood



Taxonomy: Magnificent Ramshorn

Kingdom: Animalia

Phylum: Mollusca

Class: Gastropoda

Order: Hygrophila

Family: Planorbidae

- Pulmonate, a family of air-breathing snails

Genus: Planorbella

Species: Magnifica





Status Snapshot

- Presumed extinct in the wild.
- Three captive populations in propagation facilities in Pender and Wake Counties, NC.
 - All current animals are descendants of the original population
 - 1992, collected ~150 individuals, propagated thousands,
 - 1996, lost all but 12 to Hurricane Fran.
 - 2004, found ~28 individuals
 - 2007, new found individuals introduced to reproductive population.
- Candidate species since 2011.



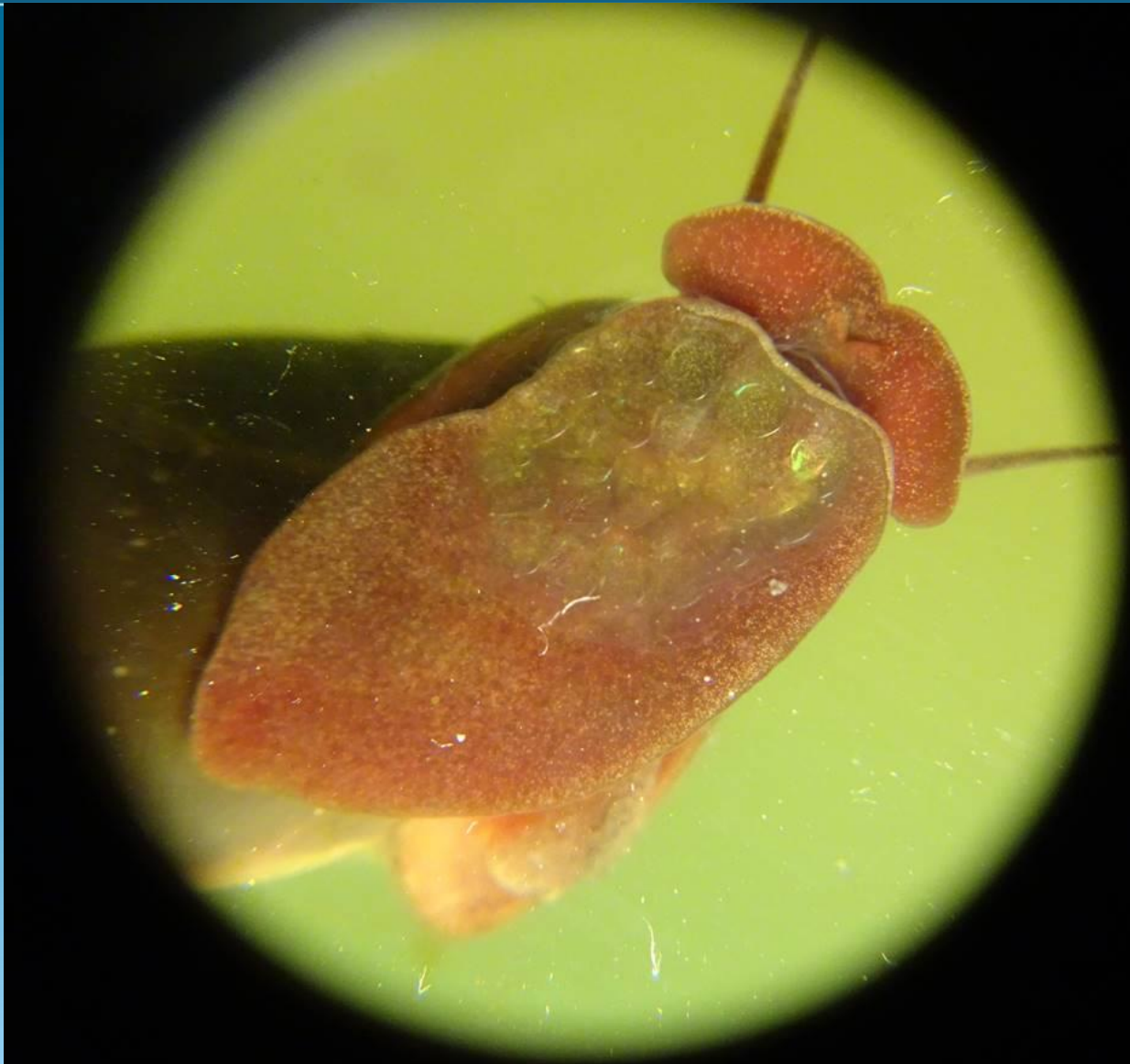
Life Cycle

View of eggs and adult

Pulmonate snails, including ramshorns, are hermaphroditic, meaning that each individual functions as both female and male, and a pair of mating snails typically fertilize each other, with both individuals laying eggs afterward. Pulmonate snails typically lay gelatinous masses of eggs underwater on the surfaces of plants or rocks.

Image Source: [Coastal Plain Conservation Group](#)

January via [Instagram](#)





Lays eggs under flat surfaces



Eggs on Spatterdock (Cow Lily)



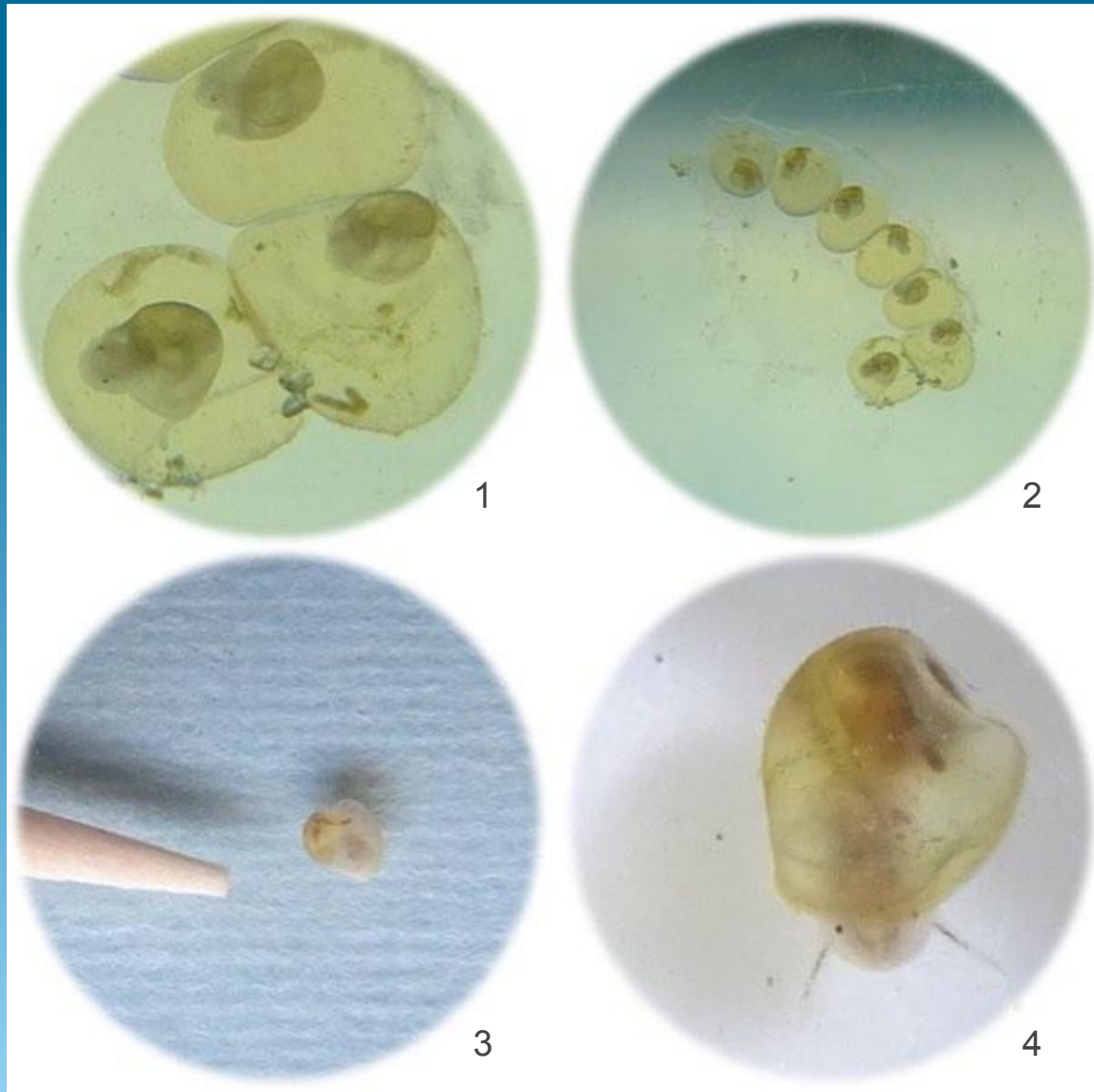
Life cycle

Magnificent Ramshorn hatching

1. close-up of developing eggs, 10-day old snails.
2. developing eggs on January 5, 2018
3. day-old hatchling with 1mm diameter toothpick tip
4. day-old hatchling . Note tiny dark eye at base of each tentacle

Source: **Coastal Plain Conservation Group**

January 15 via Instagram



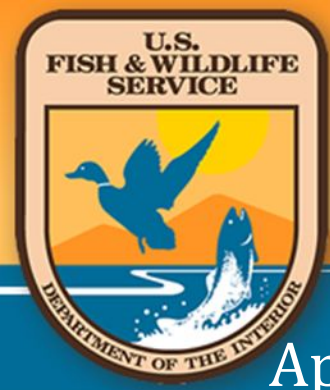


Adult

The red-brown shell marled with blue forms with a strong twist toward one side. One side is concave and the underside is convex.



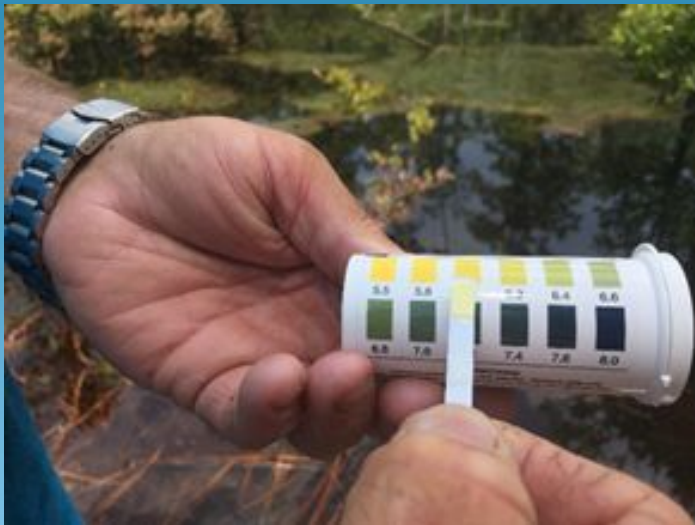
“Pulmonate” snails, breathe air by means of a lunglike organ, and do not breathe water via gills. They lack an operculum, a hard “trapdoor” that other types of aquatic snails possess that closes when the animal retracts into the shell.



Habitat Needs

Appropriate water chemistry

- Circumneutral pH (between 6.5-7.5)
- No salinity
- Slow moving water



Submerged vegetation

- spatterdock water Lily, *Nymphaea odorata*
- Species of Lily pads
- filamentous algae

Feeding

- submerged aquatic plants, algae, and detritus. In captivity they eat ripe seed head of spatterdock, lettuce, and algae wafers with spirulina. Juveniles have been observed feeding off of detritus and biofilm.



Historical Distribution

Southeastern North Carolina endemic. The species is known from only four sites in the lower Cape Fear River Basin in North Carolina:

1. **Greenfield Lake**, a millpond located on a tributary to the Cape Fear River within the present city limits of Wilmington, New Hanover County
2. **Orton Pond** (aka Sprunt's Pond), a millpond located on Orton Creek in Brunswick County
3. **Sand Hill Creek Pond** (aka Pleasant Oaks Pond or Big Pond), a millpond on Sand Hill Creek in Brunswick County.
4. **McKinzie Pond**, a millpond on McKinzie Creek, in Brunswick County

Surveys of over a hundred potential sites over the last few decades have not uncovered any additional localities.

insert a map of the portions of the Cape Fear River Basins within Wilmington, New Hanover and Brunswick counties.



Actions Underway

1. Species Status Assessment
2. Evaluating the reintroduction potential of several sites on NCWRC Gamelands, and permanent conservation lands within historical range
3. Genus needs new genetic analysis
4. 2018-Directorate Fellowship Program intern focused on supporting magnificent ramshorn conservation



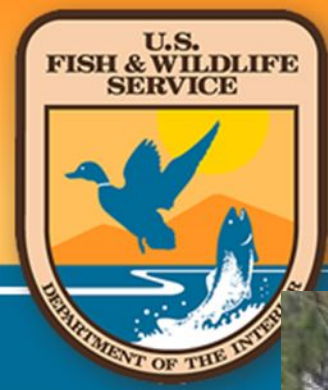
Captive propagation

- NCWRC Watha Fish Hatchery
 - Watha, NC
- Coastal Plain Conservation Group
 - Pender County
- NCSU Vet School Facility
 - Raleigh, NC



Snail dragging itself upside down across the water surface.
By L. Serrano





Typical Habitat

Boiling Springs Lake, NC





Typical Habitat

Un-named tributary of Orton Pond, NC





Historical Habitat

Greenfield Lake, Wilmington, NC



Nuphar luteum in Greenfield lake, Wilmington, NC, April-May 2018. Upper right is bed in a wetland across road from lake, lower right is an in-lake bed at southernmost tributary input.





Conservation Challenges

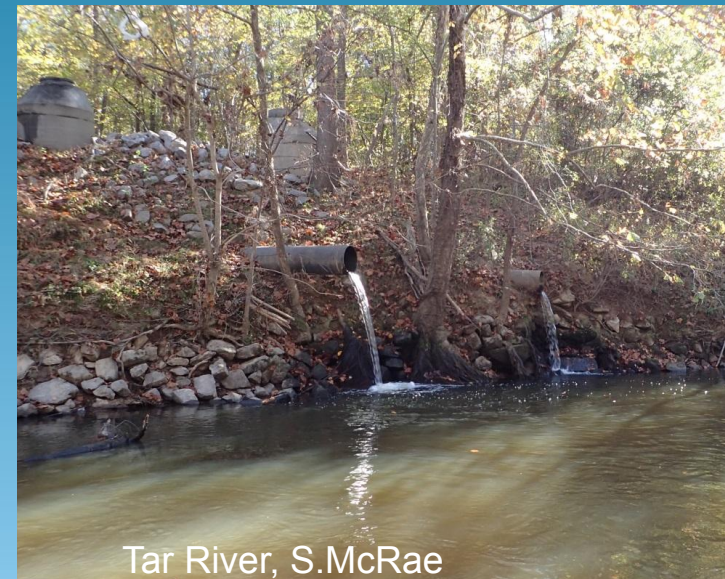
- Habitat loss and degradation
 - Development
- Salt water intrusion
- Water quality and chemistry alterations
 - The Greenfield Lake population was affected by breaks in sewer lines on the bottom of the lake; sewage overflow; lake drawdowns and chemical weed management
- Storms / Climate change
 - The Sand Hill Creek population of the magnificent ramshorn is believed to have been extirpated in 1996 when the dam on the pond was breached during flooding associated with Hurricane Fran.
- Predation
 - Frogs, fish



Conservation Challenges

The present or threatened destruction, modification, or curtailment of its habitat or range

- Dams
- Industrial and municipal pollution events
- Non-point source pollution :
 - sediments
 - fertilizers
 - herbicides
 - pesticides
 - animal wastes
 - septic tank and gray water leakage
- construction,
- contaminated runoff from urban areas



Tar River, S.McRae